

REMARKS

Claims 1, 10 and 19 are amended herein. Claims 39 - 47 have been added. Claims 1 - 20, 22 - 35 and 39 - 47 are pending. No new matter is added as a result of the claim amendments.

102(b) Rejections

Claims 1 - 9, 19, 20 and 22 - 29 are rejected under 35 U.S.C. § 102(b) as being anticipated by Wallace, et al. ("Wallace;" US 5,689,151). Applicants have reviewed the cited reference and respectfully submit that the present invention as recited in Claims 1 - 9, 19, 20 and 22 - 29 is not anticipated or shown by Wallace.

Wallace does not show or suggest "an opaque matrix for separating subpixel regions of said faceplate" as recited by independent Claim 1. Further, Wallace does not show or suggest "a barrier layer disposed over said opaque matrix and said subpixel regions of said faceplate" as recited by independent Claim 1.

Therefore, for these reasons, Applicants respectfully assert that independent Claim 1 is not anticipated by Wallace, and therefore the rejection of this Claim under 35 U.S.C. § 102(b) is traversed.

Claims 2 - 9 are dependent on Claim 1. Applicants also respectfully submit that Claims 2 - 9 traverse the Examiner's basis for rejection under 35 U.S.C. § 102(b) as these claims are dependent on an allowable base claim.

Wallace does not teach, show or suggest a “faceplate structure comprising an opaque matrix for separating subpixel regions” as recited by Claim 19, nor does Wallace teach, show or suggest “disposing a barrier layer over said opaque matrix and over said subpixel regions” as recited by Claim 19.

Therefore, for these reasons, Applicants respectfully assert that independent Claim 19 is not anticipated by Wallace, and therefore the rejection of this Claim under 35 U.S.C. § 102(b) is traversed.

Claims 20 and 22 - 29 are dependent on Claim 19. Applicants also respectfully submit that Claims 20 and 22 - 29 traverse the Examiner’s basis for rejection under 35 U.S.C. § 102(b) as these claims are dependent on an allowable base claim.

Claims 10 – 14, 16 – 19, 21 – 25 and 27 – 29 are rejected under 35 U.S.C. § 102(b) as being anticipated by Banno, et al. (“Banno,” US 5,525,861). Applicants have reviewed the cited reference and respectfully submit that the present invention as recited in Claims 10 – 14, 16 – 19, 22 – 25 and 27 – 29 is not anticipated or shown by Banno.

Applicants respectfully submit that Banno’s layer of gold (22, 23 and 25) is not “substantially continuous” as recited by independent Claim 10, and Banno’s layer 34 is not of “substantially uniform thickness” as recited by independent Claim 10.

Also, Banno does not teach, disclose or suggest “a barrier layer” that “prevents electron bombardment” as recited by independent Claim 10. The Office Action in section 4 refers to a layer of silica 500 nm thick described in Banno column 5, lines 36 – 41. Applicants understand the cited reference to refer to insulator 24, which is a portion of field emission device 2. Applicants further understand Banno to describe a processing step which acts upon silica layer 24 after the formation of electrodes (22, 23) and electron emitting zone 25: “...followed by etching using the electrodes (22, 23) and electron emitting zone (25) as masks...” (column 5, lines 44 – 45). Applicants understand “etching” to be a process step for removing material, and Banno Figure 2 clearly illustrates a non-uniformity of layer 24 in which material has been removed consistent with the described process step. Banno does not specify how much of silica layer 24 is removed or how much remains. Applicants respectfully assert that a person of ordinary skill in the art cannot assume a remaining thickness of silica in the etched regions. Consequently, it can not be assumed that sufficient thickness of silica remains to “prevent(s) electron bombardment” as recited by independent Claim 10.

For these reasons, Applicants respectfully submit that Claim 10 traverses the Examiner’s basis for rejection under 35 U.S.C. § 102(b).

Claims 11 – 14 and 16 - 18 are dependent on Claim 10. Applicants also respectfully submit that Claims 11 – 14 and 16 - 18 traverse the basis for rejection under 35 U.S.C. § 102(b) as these claims are dependent on an allowable base claim.

Banno does not teach, disclose or suggest “disposing a barrier layer over said opaque matrix and over said subpixel regions of said faceplate structure” as recited by independent Claim 19. Indeed, Banno gold layer (22, 23, 25) and silica layer 24 are disposed over a cathode substrate rather than a portion of a faceplate structure.

For this reason, Applicants respectfully submit that Claim 19 traverses the Examiner’s basis for rejection under 35 U.S.C. § 102(b).

Claims 22 – 25 and 27 - 29 are dependent on Claim 19. Applicants also respectfully submit that Claims 22 – 25 and 27 - 29 traverse the basis for rejection under 35 U.S.C. § 102(b) as these claims are dependent on allowable base claims.

103(a) Rejections

Claim 15 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Banno. Applicants have reviewed the cited reference and respectfully submit that the present invention as recited in Claim 15 is not anticipated nor rendered obvious by Banno.

Claim 15 is dependent upon Claim 10. As described above, Applicants respectfully assert that Claim 10 is not shown or suggested by Banno, and accordingly Claim 10 is in condition for allowance. Therefore, Applicants respectfully submit that Claim 15 traverses the basis for

rejection under 35 U.S.C. § 103(a) as this claim is dependent on an allowable base claim.

Claims 30 – 38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Wallace in view of Okamoto et al. (“Okamoto;” US 5,543,685). Applicants respectfully note that Claims 36 – 38 were renumbered to be Claims 33 - 35 in a previous response (“Amendment A”) filed on January 4, 2002, and understand the present rejection to apply to the original Claims 36 – 38, and consequently to renumbered Claims 33 – 35, as amended. Claims 30 – 32 are dependent on Claim 1, and renumbered claims 33 – 35 are dependent on Claim 19. Applicants have reviewed the cited references and respectfully submit that the present invention as recited in renumbered Claims 30 - 35 is not anticipated or shown by Wallace in view of Okamoto.

Claims 30 – 32 are dependent upon Claim 1. Claims 33 – 35 are dependent upon Claim 19.

As discussed above, Wallace does not show or suggest a “barrier layer (disposed) over (an) opaque matrix” as recited in Claims 1 and 19. Okamoto does not overcome the shortcomings of Wallace. Therefore, the combination of Wallace and Okamoto does not show or suggest the present invention as recited in Claims 1 and 19. Accordingly, Claims 30 – 32, dependent on Claim 1, and Claims 33 – 35, dependent on Claim 19, are also not shown or suggested by Wallace and Okamoto, alone or in combination, and Applicants respectfully assert that these claims traverse the basis for

rejection under 35 U.S.C. § 103(a) as these claims depend on allowable base claims.

In addition, Okamoto teaches color filters as “a strip-like configuration” on the anode (column 3, line 34). Okamoto does not teach, disclose or suggest that a color filter configuration may have any function other than filtering colors. More particularly, Okamoto does not teach, disclose or suggest that color filter material of any thickness may form a “barrier layer” against electrons. Applicants respectfully assert that it is not obvious to combine the function of filtering colors with another function, particularly that of forming a “barrier layer” against electrons. Wallace does not teach blocking electrons, nor combining color filters within other layers. Therefore, Applicants respectfully assert that Wallace in view of Okamoto does not show or suggest disposing a color filter “layer” on a faceplate for the combined purposes of filtering colors and forming a “barrier layer” against electrons as recited in Claims 30 – 35. For these additional reasons, Applicants respectfully assert that Claims 30 – 35 traverse the basis for rejection under 35 U.S.C. § 103(a)

CONCLUSION

In light of the above remarks, Applicants respectfully request reconsideration of the rejected Claims.

Based on the arguments presented above, Applicants respectfully assert that Claims 1-20 and 22 - 35 and new Claims 39-47 overcome the

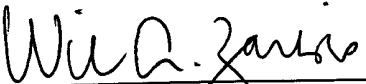
rejections of record and, therefore, Applicants respectfully solicit allowance of these Claims.

The Examiner is invited to contact Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Claims 1, 10 and 19 have been amended as follows:

1. (Twice Amended) A protected faceplate structure of a field emission display device, said protected faceplate structure comprising:
 - a) a faceplate of a field emission display device, said faceplate comprising phosphor containing wells disposed above one side thereof; [and]
 - b) an opaque matrix for separating subpixel regions of said faceplate; and
 - c) a barrier layer disposed over [said one side of] said opaque matrix and said subpixel regions of said faceplate, wherein said barrier layer prevents penetration by electrons directed towards said faceplate.

10. (Twice Amended) A protected cathode substrate structure of a field emission display device, said protected cathode substrate comprising:
 - a) a cathode substrate of a field emission display device, said cathode substrate comprising an electron emitting structure disposed above one side thereof; and
 - b) a substantially continuous barrier layer of substantially uniform thickness disposed over said one side of said cathode substrate, wherein said barrier layer prevents electron bombardment by electrons originating from said electron emitting structure.

19. (Twice Amended) A method for protecting a substrate structure of a field emission display device, said method comprising the steps of:

a) providing a [substrate] faceplate structure of a field emission display device, said faceplate structure comprising an opaque matrix for separating subpixel regions of said faceplate structure; and

b) disposing a barrier layer over said opaque matrix and over said subpixel regions of said faceplate [substrate] structure, wherein said barrier layer prevents penetration by electrons [directed toward said faceplate].

21. (Canceled)

Please add the following new Claims:

39. (New Claim) A method for protecting a cathode structure of a field emission display device, said method comprising the steps of:

a) providing a cathode structure of a field emission display device, said cathode structure comprising an electron emitting structure disposed above one side thereof; and

b) disposing a substantially continuous barrier layer of substantially uniform thickness over said one side of said cathode structure, wherein said barrier layer prevents penetration by electrons.

40. (New Claim) The method for protecting a cathode structure of a field emission display device as recited in Claim 36 wherein said cathode structure comprises a cathode substrate of said field emission display device.

41. (New Claim) The method for protecting a cathode structure of a field emission display device as recited in Claim 36 wherein step a) comprises providing a high sodium substrate structure for said field emission display device.

42. (New Claim) The method for protecting a cathode structure of a field emission display device as recited in Claim 36 wherein step b) comprises disposing said barrier layer over said cathode structure such that said barrier layer has a thickness sufficient to prevent substantial penetration of said electrons therethrough.

43. (New Claim) The method for protecting a cathode structure of a field emission display device as recited in Claim 36 wherein step b) comprises disposing a barrier layer over said cathode structure wherein said barrier layer is selected from the group consisting of silicon dioxide, Al_2O_3 , CrO_x , ZnO , Si_3N_4 , SiO_2 , TaO_5 , Tin Oxide, ITO, ZrO_2 , Y_2O_3 , TiO_2 and MgO and combinations thereof.

44. (New Claim) The method for protecting a cathode structure of a field emission display device as recited in Claim 36 wherein step b)

comprises disposing said barrier layer to a thickness of approximately 100 nanometers over said substrate structure.

45. (New Claim) The method for protecting a cathode structure of a field emission display device as recited in Claim 36 wherein step b) comprises disposing said barrier layer over said cathode structure wherein said barrier layer prevents migration of contaminants from said cathode structure into said field emission display device.

46. (New Claim) The method for protecting a cathode structure of a field emission display device as recited in Claim 36 wherein step b) comprises disposing said barrier layer over said cathode structure such that said barrier layer prevents migration of sodium from said substrate structure into said field emission display device.

47. (New Claim) The method for protecting a cathode structure of a field emission display device as recited in Claim 36 wherein step b) comprises disposing an electrically conductive barrier layer over said cathode structure.